



# **Subject Statement: Mathematics**

## **Curriculum Intent:**

At Harper Bell, we recognise that mathematics is essential to everyday life. Our mission in mathematics is for ALL children to become confident, and fluent mathematicians who have a deep and positive understanding of the universal language of maths. We aspire for our children to be logical thinkers, applying their mathematical learning to reasoning and solving problems; skills vital for everyday life opportunities, alongside being fluent in their understanding of the number system.

In line with our mission statement, we intend to teach whole class mathematics lessons, allowing all learners the opportunity to achieve the learning objective for the lesson, moving through the mathematics curriculum at the same pace. Within our lessons, we will not set limits on what our children can achieve and will have high expectations of ALL our pupils. Ofsted research highlights that children and adults, are more likely to develop a positive attitude to mathematics when they feel successful in it. We aspire for all our children to experience success within mathematics lessons and to develop a self-confidence and belief that at Harper Bell, we are all mathematicians.

Whilst we aim to teach whole class mathematics, we are aware that there may be some children who have gaps in their mathematical understanding and are less confident in the fundamentals of mathematics. Therefore, we intend to provide these pupils with opportunities to 'catch-up' and continue to develop their recall of number facts in addition to whole class mathematics teaching. This may take place in the form of small group 'catch-up' sessions or on an individual basis, with the aim to 'close the gap' between high and low attainment in mathematics.

There are three aims of the Mathematics National Curriculum, one of which states that pupils will 'become fluent in the fundamentals of mathematics, through varied and frequent practice, building on complex problems over time'. At Harper Bell we aspire for our pupils to develop a conceptual understanding of mathematics and to develop an ability to recall number facts rapidly and accurately to grow into effective and competent mathematicians. The National Curriculum and the Framework for teaching mathematics make it clear that children should be taught to internalise number facts and develop a range of mental strategies to make links to related facts that cannot recall rapidly. Our approach to the teaching of mathematics will facilitate our pupils being able to efficiently recall key number facts, from Reception to Year 6. With this approach, we intend for the children of Harper Bell to build confidence and proficiency with number, allowing them to free up their working memory to reason and solve more complex problems.

The additional National Curriculum aims focus on reasoning and problem solving, by following a line of enquiry, developing an argument or breaking down concepts to solve problems that increase in sophistication. This is an area of mathematics that ALL children are entitled to. Therefore, we aim to build problem solving and reasoning into each session for all pupils, not just those children who are confident with the fluency of number. At Harper Bell, we intend to develop our pupils understanding of mathematical concepts so that when faced with a problem, they are able to visualise and deepen their understanding of the structure behind the problem, as opposed to focusing on the answer. This will equip them with skills that will allow them to apply their knowledge to different contexts and to support their problem solving in everyday life.

## **Curriculum Implementation**

At Harper Bell, we use the White Rose documentation to support the delivery of our mathematics curriculum. This scheme breaks mathematical knowledge down into small steps, allowing children time to develop and internalise key concepts. Within White Rose, learning is sequenced in a way that allows



children to build their mental models and make links to prior learning. The blocked units give learners the opportunity to access key mathematical principles in a variety of ways, expanding their conceptual understanding, and allowing time to revisit and practice these skills. This falls in line with our curriculum approach of retrieval and spaced practice.

The White Rose scheme provides children with opportunities to practice fluency alongside developing their problem solving and reasoning skills within each small step. Teachers will use and adapt the White Rose scheme to best suite their learners and our five-part lesson model. this may involve breaking steps down into smaller chunks, providing additional representations or exploring a concept in more depth over several lessons.

Within the mathematics curriculum, we believe the concrete-pictorial-abstract (CPA) approach is the most effective in harnessing children's potential in mathematics; this is further supported in the White Rose scheme of work. Throughout all phases of mathematics teaching, manipulatives can help learners create and use representations to organize, record and communicate mathematical ideas. Learners are encouraged to visualise a concept using concrete resources, connecting the concrete manipulatives to picture form before transitioning to the abstract representation. We do not however teach these representations in isolation; pupils are exposed to each representation alongside each other so they are able to make links in the structure of the problem. This CPA approach will be evident in both mathematics books and on our working walls in classrooms.

Across the curriculum, and within mathematics, we use the five-part lesson model to teach our children. This five-part structure focuses on the revision or retrieval of prior knowledge, explicit teaching and modelling of a new concept, deliberate practice of new knowledge to develop understanding and an opportunity to review and assess learning. A hinge-question will allow teachers to formatively assess the children's understanding of the explicit teaching, identifying which children can be challenged further, and which children may require additional support. As part of the five-part lesson model, different scaffolds will be provided so that all children are able to achieve success within the lesson.

Our mathematics curriculum also focuses on developing mathematical vocabulary, supported by the White Rose scheme and our use of working walls. In class, teachers will explore the meaning of mathematical vocabulary and children will be exposed to mathematical language in each lesson. Being exposed to such vocabulary will allow for meaningful discussions in mathematics and provide children with the language to articulate their reasoning of a mathematical concept more effectively. Additionally, exploring language in daily practice and having mathematical visible on working walls will help to support our children who have English as an Additional Language (EAL), if the words are used and associated within a clear mathematical context. To further support this language development, we will pre-teach vocabulary to children who have EAL so they are better able to access whole class teaching.

To further support the development of mathematical fundamentals, alongside the White Rose document, our KS1 children are taking part in the NCTEM Mastering Number Programme. Children will engage in short, practical sessions to develop 'fluency in calculation and a confidence and flexibility with number' and enable pupils to communicate their mathematical ideas effectively. This will support KS1 children in developing a deeper understanding of number, allowing them to better access more complex problems in KS2. Reception, Year 1 and Year 2 children will be taking part in this program.

### **Curriculum Impact**

Throughout the academic year, we expect pupils to have made progress from their starting points. Those children who are identified as having gaps in knowledge or additional needs with receive appropriate



support and intervention, in order for as many children as possible to reach Age Related Expectations or Greater Depth.

Children in KS1 will transition into KS2 with a deep understanding of the number system and can rapidly recall number facts to support their problem solving and reasoning. This will support all pupils in Year 4 in successfully completing the Multiplication Check.

Children will be able to share the universal language of mathematics to discuss their understanding of mathematical concepts and to reason and solve problems, using correct mathematical language independently. They will show a deeper understanding of mathematical concepts and make links within their mathematical learning.

Our pupils at Harper Bell will have a positive attitude and learning disposition in mathematics, understanding that it is a skill that is used to solve everyday problems. Children will speak enthusiastically about mathematics lessons and show pride in their presentation and understanding of mathematics concepts. Teachers, parents and pupils will continue to have high expectations of what learning can be achieved in mathematics and value this subject as a building block for everyday life.

### **Curriculum Summary**

- The White Rose document breaks learning down into **small steps** and supports the deepening of mathematical concepts.
- The **CPA Approach** will allow children to see the structure behind a problem and to contextualise mathematical learning.
- Key mathematical language and **vocabulary** is embedded within lessons.
- The **five-part lesson model** is in place for revision and *retrieval of prior knowledge, explicit teaching and deliberate practice*.
- The **whole-class teaching** approach sets high expectations that ALL children will experience success within a mathematical lesson, with **scaffolds** in place to support ALL children in achieving this.
- In KS1, children will access the Mastering Number program to develop proficiently, **fluency** and **confidence** in calculations and the number system.
- All children will explore the National Curriculum aims of fluency, problem solving and reasoning in the mathematics curriculum.
- Children build their confidence and develop **positive attitudes** and learning dispositions in mathematics by experiencing **success** in every lesson.